We claim:

1.   A method for storing a packet in a shared memory in a packet switch, said shared memory comprising one or more buffers, each of said one or more buffers comprising a plurality of banks, said method comprising the step of:

        storing at least a portion of a packet in contiguous banks of a first buffer.

2.   The method of claim 1, wherein said packet comprises a plurality of data units, and further comprising the step of storing an additional portion of said packet in contiguous banks of a second buffer if one of said data units is stored in a last bank of said first buffer and said data unit stored in said last bank of said first buffer is not a last data unit of said packet.

3.   The method of claim 1, wherein each of said one or more buffers comprises one or more groups and each of said groups comprises a plurality of banks.

4.   The method of claim 1, wherein at least a portion of each of two or more packets are stored in one of said buffers.

5.   The method of claim 1, further comprising the step of cyclically accessing one or more data ports, each of said data ports corresponding to one or more of said plurality of banks.

6.   The method of claim 1, wherein said banks are divided into a first set of banks and a second set of banks, and further comprising the step of allocating a buffer that comprises one or more banks from said first set and a buffer that comprises one or more banks from said second set in response to a buffer request.

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7.   The method of claim 1, wherein said shared memory exchanges packets between ports in said packet switch.

8.   The method of claim 1, wherein said sequential data units of said packet are
5   stored in contiguous banks of at least one of said one or more buffers.

9.   A method for managing a shared memory in a packet switch, said shared memory comprising one or more buffers, said method comprising the step of:
        maintaining a buffer usage count for at least one of said buffers.
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10.   The method of claim 9, further comprising the step of incrementing said buffer usage count by one to indicate that a packet destined for one output port is stored in said buffer.

15   11.   The method of claim 9, further comprising the step of decrementing said buffer usage count by one when a data unit is read from said buffer and said data unit is the last data unit of a packet or the last data unit of said buffer.

12.   The method of claim 9, wherein said buffer usage count indicates a number
20   of destination ports for a packet to perform a multicasting operation.

13.   The method of claim 9, further comprising the step of determining whether a buffer is free based on said buffer usage count.

25   14.   The method of claim 9, wherein said buffer usage count provides an indication of the sum over all packets in said at least one of said buffers of the number of output ports toward which each of said packets is destined.

15.   A method for detecting a lost buffer in a shared memory of a packet switch,
30   said method comprising the steps of:
        searching a free buffer list; and
        searching a cyclical trace memory.

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16.   The method of claim 15, further comprising the step of waiting a predefined period for an indication of a release of said buffer.

5   17.   The method of claim 15, further comprising the step of adding said lost buffer to a free buffer list if the release of said buffer does not occur during said waiting period.

18.   A shared memory for storing a packet, comprising:

10   one or more buffers, each of said buffers comprising a plurality of banks, wherein at least a portion of said packet is stored in contiguous banks of a first buffer.

19.   The shared memory of claim 18, wherein said packet comprises a plurality of data units, and wherein an additional portion of said packet is stored in contiguous

15   banks of a second buffer if one of said data units is stored in a last bank of said first buffer and said data unit stored in said last bank of said first buffer is not a last data unit of said packet.

20.   The shared memory of claim 18, wherein each of said one or more buffers

20   comprises one or more groups and each of said groups comprises a plurality of banks.

21.   The shared memory of claim 18, wherein at least a portion of each of two or more packets are stored in one of said buffers.

25   22.   The shared memory of claim 18, wherein said banks are divided into a first set of banks and a second set of banks, and further comprising the step of allocating a buffer that comprises one or more banks from said first set and a buffer that comprises one or more banks from said second set in response to a buffer request.

30   23.   The shared memory of claim 18, wherein said shared memory exchanges packets between ports in a packet switch.

24.   The shared memory of claim 18, further comprising a counter for monitoring a buffer usage count that provides an indication of the sum over all packets in said at least one of said buffers of the number of output ports toward which each of said packets is destined.